ABSTRACT

A system for transmitting subchannel data over the same media as high speed data, especially DC balanced high speed data. A digital transmitter receives subchannel data and modulates it onto a subchannel carrier as the host signal in the preferred embodiment using frequency shift keying. The FSK subchannel carrier is added by superposition to the high speed data signal. At the receiver, a low pass filter filters out the subchannel carrier frequency components which are then amplified and subjected to a two-pole anti-aliasing filter to remove the third and fifth harmonics. Analog-to-digital conversion is followed by a digital mix down to remove the subchannel carrier component using a local oscillator at the subchannel carrier frequency. An FIR low pass filter having a triangular time domain response performs anti-aliasing and leaves as an output only frequency components at the positive and negative deviation frequency for Mark and Space. Mark and space detectors then determine the relative magnitude of the signal received at the positive and negative deviation frequencies in the complex phasor domain to determine when Mark and Space frequencies are being received. Because of the ability to have very narrow bandwidths for the passbands of the digital IF filters, the receiver is more sensitive and less susceptible to the need for tuning to accomodate manufacturing variations in the rise times of the high speed data signals.